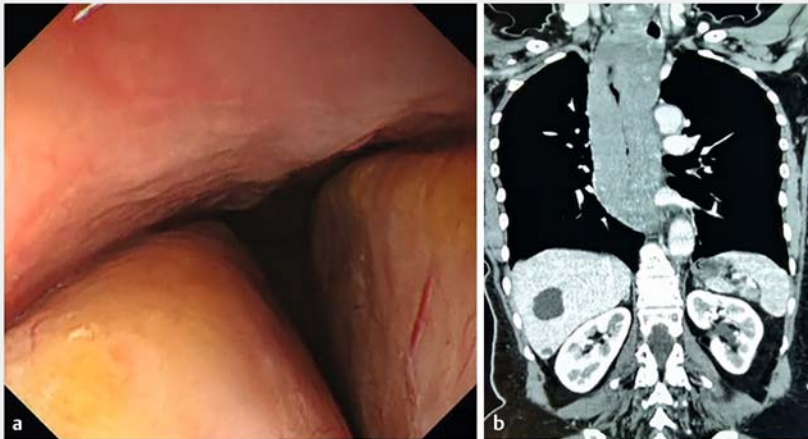
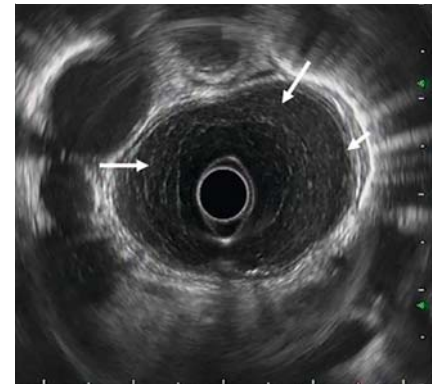


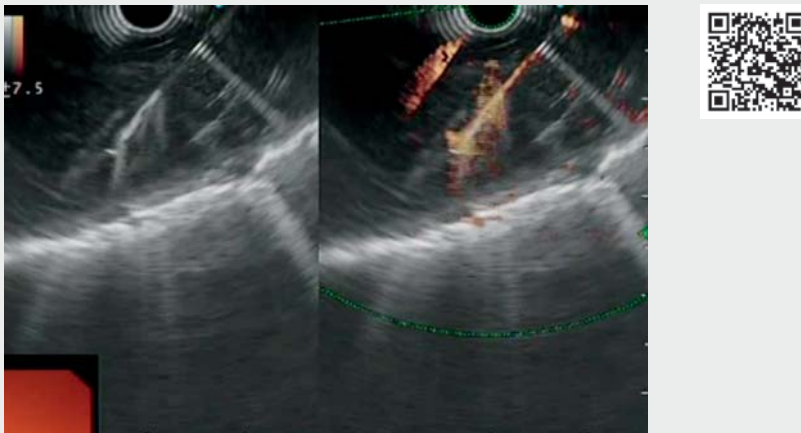
## Primary mucosa-associated lymphoid tissue lymphoma of the entire esophagus diagnosed by endoscopic ultrasound-guided fine needle aspiration



► **Fig. 1** **a** Upper gastrointestinal endoscopy showed a large mass protruding into the lumen with an intact mucosa, lobulated, extending from 16 cm from the incisor teeth to 38 cm just above the gastroesophageal junction. **b** A computed tomography scan demonstrated a significant thickening of the entire esophageal wall. No mediastinal lymphadenopathy was observed.



► **Fig. 2** Endoscopic ultrasound demonstrated a heterogeneous mass in the submucosa with partial involvement of the muscularis propria (small white arrow). A hyperechoic area (large white arrows) is also seen.



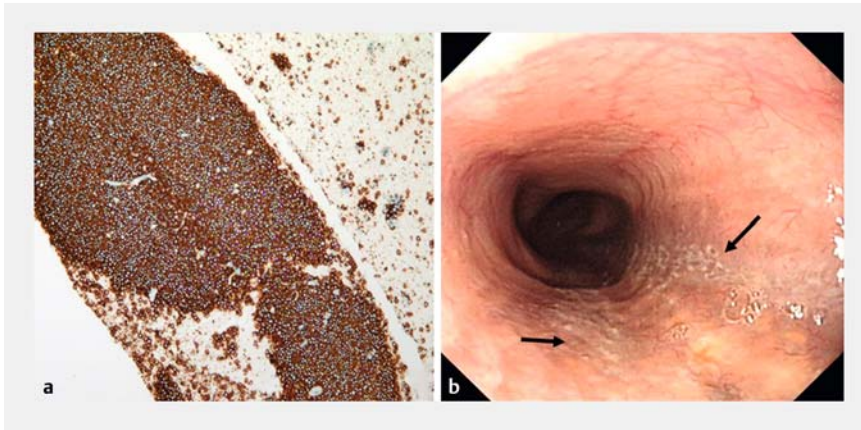
► **Video 1** A mass protruded into the lumen with an intact, lobulated, and yellowish mucosa. Endoscopic ultrasound-guided fine needle aspiration with a 19-G needle was performed. During the procedure, 0 ml of negative pressure and two needles were used.

A 62-year-old woman was admitted for progressive dysphagia and weight loss over a 6-month period. She had no evidence of any abnormal laboratory findings or immunosuppressive diseases.

Physical examinations were also unremarkable.

Gastroscopy showed, despite sufficient insufflation, a large soft, elastic mass protruding into the entire esophagus

lumen with normal mucosa, extending from 16 cm from the incisor teeth to 38 cm just above the gastroesophageal junction (► **Fig. 1 a**). Enhanced mediastinal computed tomography (CT) revealed a thickening of the entire esophageal wall, with a maximum diameter of 27 mm, producing severe luminal narrowing. No mediastinal lymph node enlargement was observed (► **Fig. 1 b**). Endoscopic ultrasound (EUS) demonstrated a lesion affected from the introitus esophagus to the distal end, with an obviously thickened wall layer. This thickening was mainly accentuated in the submucosa compatible with the microcalcifications that were seen (► **Fig. 2**). Partial involvement of the muscularis propria was noted. The internal echotexture was somewhat heterogeneous, with both isoechoic and hyperechoic areas. Elastography indicated the mass was soft. Endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) was performed through a 19-gauge needle (Cook Endoscopy, Winston-Salem, NC, USA) (► **Video 1**). Primary mucosa-associated lymphoid tissue (MALT) lymphoma was confirmed by histopathological ex-



► **Fig. 3** **a** Histopathological examination showed a significant submucosal infiltration of lymphocytes with B-cell markers, etc. (CD20+) (100×). **b** After 4 months of chemotherapy, reexamination gastroscopy showed the esophageal mucosa with a white scar (black arrows) and significant improvement.

amination (► **Fig. 3 a**). The patient was then treated with four courses of chemotherapy with rituximab, cyclophosphamide, vincristine, doxorubicin, and prednisolone. Her esophagus showed significant remission with a decrease of thickening, and dysphagia had disappeared (► **Fig. 3 b**).

Primary gastrointestinal (GI) lymphoma, especially of the esophagus, is an extremely rare site of involvement, with fewer than 30 cases in the literature [1]. Endoscopic findings are unspecific with varying presentations, including polypoid mass with or without ulceration, varicoid stenosis, strictures, or submucosal nodules, among others [2–4]. However, almost no cases involved the entire esophagus. Given such a diverse spectrum of presentations, histology is mandatory to confirm diagnosis. Unfortunately, many of these cases were diagnosed surgically [5]. FNA biopsy is a safe method and indeed provides a high diagnostic yield in GI lymphomas.

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## Competing interests

The authors declare that they have no conflict of interest.

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